

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

In the Matter of:)	
)	
Implementation of the Local Competition Provisions in the Telecommunications Act of 1996)	CC Docket No. 96-98
)	
)	
Interconnection between Local Exchange Carriers and Commercial Mobile Radio Service Providers)	CC Docket No. 95-185
)	

**DECLARATION OF JUDITH R. LEVINE AND RONALD J. MCMURTRIE
On Behalf of MCI WorldCom, Inc.**

Based on our personal knowledge and on information learned in the course our business duties, we, Judith R. Levine and Ronald J. McMurtrie, declare as follows:

1. My name is Judith R. Levine. I am Executive Director of Mass Markets Local Service for MCI WORLDCOM, Inc. ("MCI WorldCom"). In this position, I am responsible for the strategy and execution of MCI WorldCom's plans to provide local service for the Mass Markets, which include residential and small business markets.

2. My name is Ronald J. McMurtrie. I am Vice President of Product Marketing for MCI WorldCom's Business Markets division. In this position, I lead MCI WorldCom's overall business marketing efforts, specifically focusing on the integration of telecommunications services for the corporate market. In addition, I oversee the Business Markets division's activities in strategy marketing, marketing research, brand management,

competitive intelligence, pricing and promotions, as well as marketing positioning and direction for emerging products and services.

3. The purpose of this declaration is to discuss the factors that affect MCI WorldCom's business plans and product launches. MCI WorldCom constructs a national business plan to help it determine how to allocate the company's capital resources. As part of that plan, MCI WorldCom identifies the local markets it intends to enter, the customers it intends to target and the services it intends to provide in those markets, and the equipment and processes it will need to provide those services. Product launches can be local, statewide, regional or national.

4. Business plans must be made at a national level for several reasons. First, a national vision is needed to determine how much total capital is required, and to set priorities about where to deploy that capital. Second, MCI WorldCom already serves a national long-distance customer base and its existing long-distance customers are very relevant to the company's future local market plans. Third, there are certain functions that are most efficiently performed on a national basis, using a single, centralized system, database or work force. However, MCI WorldCom still is unable to provide on a mass-markets basis nationwide service today in part because of an uncertain regulatory environment and the incumbent local exchange carriers' ("ILECs") continuing refusal to comply with the market opening provisions of the 1996 Telecommunications Act.

5. Business plans and product launches are based on the market potential, the availability and costs of inputs, capital constraints and the regulatory environment. Cost and revenue projections are used to determine what overall direction the business plans will take and

whether an individual product launch appears feasible. The greater the uncertainty about the availability or costs of inputs, the more difficult it is to construct business plans or to identify potentially successful product launches. It is very difficult to commit resources in the absence of some certainty about the availability and costs of inputs.

6. The risk of unanticipated delay is a great deterrent to entry into a market. MCI WorldCom's business plans require that the company make capital investments far in advance of product launches, and that marketing expenditures be made before and during launch. If there are unforeseen delays that force postponement or cancellation of the launch, or that do not allow customers to timely receive the service MCI WorldCom has promised in its launch, MCI WorldCom will not only lose some or all the return on these capital and marketing investments, but its future customer acquisition costs will be higher because of bad publicity resulting from the delay.

7. MCI WorldCom has experienced unforeseen delays in local market business plans and product launches over the past few years. These delays have been caused by ILECs' refusals to provide unbundled network elements ("UNEs"), ILEC administrative appeals and ILEC court challenges, all of which have disrupted and undermined MCI WorldCom's business plans and individual product launches.

8. MCI WorldCom wants to provide service wherever it is feasible to do so on a profitable basis. Ultimately, the company expects that this will result in its ubiquitous provision of local telecommunications services, just as MCI WorldCom quickly expanded to a ubiquitous long-distance footprint. But given the existence of substantial scale economies and the company's limited capital budget, MCI WorldCom's business strategy must be first to focus on

markets where it can hope to capture enough customers to support its initial investment, and to provide cash flow for expansion. A business seeking to grow into all relevant markets will always start where it is easiest and most profitable.

9. MCI WorldCom's choices in this regard have been further limited because, with very few exceptions (most notably the company's mass markets launch in New York), MCI WorldCom has been forced to go to market using only its own facilities. This is because of unprofitable resale pricing and the practical unavailability of unbundled network elements. One reason UNEs are practically unavailable is because they are not available at cost-based rates. The loop, in particular, constitutes the greatest cost of the service in most network designs and, in most locations, is not available at cost-based rates because either the state commission has declined to geographically deaverage the loop rate, or has otherwise set the rate too high. Other UNEs are practically unavailable because of: (1) continuing problems with the pre-ordering, ordering, provisioning, billing, and repair and maintenance that are required in order for MCI WorldCom to make use of a UNE; and (2) ILECs' refusal to offer UNEs in combination or as a "platform" of elements, and the continuing unresolved court and regulatory battles over these issues.

10. MCI WorldCom mass markets units have determined that to service residential and small business customers on a ubiquitous basis we need the UNE platform. Moreover, we will be unable to develop even platform service promptly nationwide unless and until there are nationwide, industry-standard OSS interfaces that we can use. Today, unfortunately, there is no platform in most places, and there are no uniform interfaces. As a result of all of this, MCI WorldCom's local services to date are predominantly offered to high-volume

business customers in dense urban areas, where the company can profitably build-out its own facilities. Thus, MCI WorldCom's initial facilities investments have been for fiber rings which have been built to pass by the company's business customers, and for local switches. This architecture minimizes the loop lengths needed and, therefore, allows MCI WorldCom to self-provision loops to its major business customers, and to use its own facilities to provide end-to-end on-net services between the various locations of its major customers.

11. This strategy has two important features. First, it eliminates the outflow of access charge dollars to ILECs for MCI WorldCom's customers' on-net calls. Second, it allows MCI WorldCom to control the quality of service and the time required for ordering, provisioning, maintaining and repairing service. This strategy also creates an incentive for the company to continue to expand its network as its multi-location customers request that more of their locations be brought onto the MCI WorldCom network.

12. However, it is neither physically nor financially possible for MCI WorldCom to expand its network indefinitely in the near future. Facilities build-out is a slow and incremental process because MCI WorldCom must build its customer base one-by-one. The investment required in facilities build-out in this fashion simply does not result in adequate return to justify rapid expansion.^{1/}

13. An important part of MCI WorldCom's business strategy, therefore, focuses on how it can create a presence in markets where the economic factors do not yet warrant construction of facilities, and how to use that presence to achieve a market penetration sufficient

^{1/} Meanwhile, entry strategies such as UNE platform, which provides MCI WorldCom the ability to reach many customers immediately, facilitates rapid expansion. But as explained below, ILECs do not make UNE platform available in the great majority of markets.

to support its own facilities. Of course, MCI WorldCom can only create that presence, and reach more people more quickly, if it can lease UNEs. The company's business plan and strategy, therefore, is to lease UNEs where it cannot yet self-provision efficiently, and to use these elements as part of a transition to more and more self-provisioning. Using leased facilities, MCI WorldCom hopes to build a sufficient customer base to create the economies of scale and scope that would justify self-provisioning.

14. We understand the argument has been made that if competitors like MCI WorldCom can lease elements, they will have no incentive to construct their own facilities. This has matters completely backwards. Only by being allowed to lease facilities will MCI WorldCom generate sufficient revenues and customers to warrant the construction of new facilities. In the real world, leasing is not a deterrent to facilities construction; it is a necessary precondition to such construction. Unfortunately, for the reasons set out above, UNEs have been practically unavailable to MCI WorldCom and, as a result, the company has been unable to implement this part of its business plan in the overwhelming majority of markets. Even in New York, where facilities leasing is further ahead than in most other states, Bell Atlantic still cannot provision lops, even in very small quantities.

15. While MCI WorldCom has a single overarching business plan, the transition strategy that underlies that plan requires a different path for Business Markets than for Mass Markets. For Business Markets, in the absence of effective UNE leasing provisions, the company intends to continue to focus on end-to-end, on-net service provision. MCI WorldCom will expand its network incrementally to bring as many customers and customer locations on-net as is feasible. This is possible in part because sales and marketing costs for Business Markets are

primarily sales force expenditures that can be targeted at individual customers. Similarly, large and medium sized businesses are more geographically concentrated than residential and small business customers and thus require a less ubiquitous network.

16. Serving Mass Markets in this regulatory environment is more of a challenge. Mass marketing requires “broadcast” type advertising and marketing campaigns that are not narrowly targeted and also requires a ubiquitous network to reach all potential customers. MCI WorldCom must reach as many potential customers as possible to enjoy any economies of scale, and yet the traffic the company can expect along any individual path will be relatively thin. Thus, MCI WorldCom recognizes in its business plans that the on-net approach will not work for Mass Markets. The only feasible way for MCI WorldCom to reach many customers without requiring unrealistic up-front investment costs is to lease UNEs, and then to migrate to its own facilities as the company’s market penetration increases.^{2/} Where leasing combinations of UNEs, and in particular the so-called UNE platform of elements, is not a practical option, MCI WorldCom will be unable to service Mass Market customers.

17. This is not an abstract proposition. In New York, where the element prices do not make competition impossible, where the UNE-P platform is available, and where there is at least some working OSS to order and provision the platform, we are in the mass markets business. In a few short months since these pieces have been in place, MCI WorldCom already has in excess of 40,000 residential customers serviced through the platform, with another 20,000 customers expected to be on MCI local service next month. We expect these numbers to grow

^{2/} It frequently is not feasible for MCI WorldCom to extend its network to each and every location of a large business customer. To fully serve that customer, MCI WorldCom will need access to UNEs to serve those off-net locations.

rapidly. All of this is happening even though Bell Atlantic continues to have problems with its OSS. If and when Bell Atlantic fixes the remaining problems with its OSS, we will be in a position to compete aggressively for a great many more residential customers, and we have every confidence that New York consumers will respond enthusiastically.

18. Unfortunately, New York remains the exceptional case. In most jurisdictions, platform simply is not available. Even where it is, often the wholesale price of the loop and the switch port alone is more than the retail price of residential service, a wholesale price that makes competition through elements automatically unprofitable and so impossible. And, wholly apart from problems of the legal availability of the platform and the pricing of the elements, unless the ILEC has working OSS to allow CLECs to preorder, order, provision, bill for and maintain the service, no residential service is possible. But as the New York experience is beginning to show, when the necessary components are present, mass market competition is possible.

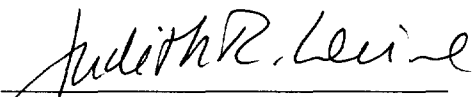
19. The local loop remains the bottleneck facility connecting providers to most customers, so its availability is especially important for serving the great majority of customers. MCI WorldCom cannot move forward with its business plans and product launches without some assurance that ILECs will efficiently provision, at cost-based rates, the volume of loops MCI needs for a commercial launch of local services. MCI WorldCom already has deployed 105 local voice switches but has not been able to use them to provide Mass Markets services because of the ILECs' current charges for collocation and because the ILECs cannot efficiently provision loops when MCI WorldCom uses its own switches. No ILEC has demonstrated the ability to provision loops in a timely fashion in the volumes MCI WorldCom needs -- thousands per week -- when

MCI WorldCom undertakes a Mass Markets launch. Also, no ILEC has OSS in place to provision loops efficiently, although progress is being made in New York. Until the connectivity and provisioning issues are resolved, the only feasible way for MCI WorldCom or any other competitive local exchange carrier to provide Mass Markets service will be through the ILEC platform provided at cost-based rates. Unfortunately, that service entry vehicle is not available today in the great majority of markets.

20. Although MCI WorldCom has no choice but to rely on the ILEC platform of UNEs to enter Mass Markets today, the company has a strong desire and incentive to migrate to its own facilities as soon as possible. It is bad business for MCI WorldCom to rely exclusively on the ILECs -- who are MCI WorldCom's dominant competitor -- for key inputs. This attitude runs throughout MCI WorldCom's ranks, as its managers are compensated for their performance using objective revenue measures and they want, therefore, to maintain as much control as possible over their business plans and launches. It is difficult to do this when input availability or pricing is uncertain, where there are high risks of delays that are entirely beyond MCI WorldCom's power to control, and when there is uncertainty about the availability and price of key inputs.

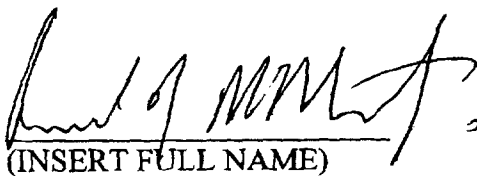
I declare, under penalty of perjury, that the foregoing is true and correct.

Executed on May 24, 1999.



Judith R. Levine

I declare, under penalty of perjury, that the foregoing is true and correct. Executed on
May 26, 1999.


(INSERT FULL NAME)

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**DECLARATION OF JOHN E. KWOKA, JR.
On Behalf of MCI WorldCom, Inc.**

1. My name is John E. Kwoka, Jr. I am Professor of Economics and Columbian School Distinguished Professor at George Washington University, where I teach the economics of regulation, antitrust, and industrial organization. I have authored or co-authored some forty articles in economics journals and books on such issues as firm conduct, market performance, concentration, advertising, and entry, as well as various issues in the telecommunications, electric power, automobile and other industries. I have also published two books in these fields.

2. I am currently President of the Industrial Organization Society, a U.S. and international professional association of economists with interests in industrial organization and policy. I also am Co-Director of the George Washington University Research Program in Industry Economics and Policy. I serve on the editorial boards of two economics journals specializing in industrial organization and on the Advisory Board of the American Antitrust Institute.

3. I have been asked by MCI WORLDCOM, Inc. ("MCI WorldCom") to comment on the economics of the entry process into local exchange service, a process guided by the Telecommunications Act of 1996 (the Act) and Federal Communications Commission (FCC) regulations. The Act's focus on the local exchange--and specifically, on fostering competition through entry into the local exchange--is well-taken. Crucial issues remain, however, in implementing these principles in a manner consistent with the realities of this market.

4. If competition is to come to the local exchange anytime soon, in virtually all geographic locations this requires nondiscriminatory access to unbundled network elements (UNEs). Neither facilities-based entry nor resale offers the prospect of quick, viable, and effective entry by a competitive LEC. The Act requires the provision of any element for which denial would impair a CLEC's ability to provide services. I would interpret this standard as directing attention to elements for which denial would materially raise a competitor's cost or otherwise cause material loss of competitor's business.

5. By this standard all the elements set out in the FCC's Local Competition Order should be offered on a nondiscriminatory basis throughout the nation. Because localized decisions would eviscerate the Act at this point in time, even those few elements that may arguably not give rise to prohibitive cost differentials in some few areas of the country should be so offered. The delays in competition and attendant costs to consumers from any other standard argue for erring on the side of entry. In order to accommodate significant changes in market conditions, these determinations should be revisited periodically. I would urge a three-year time frame.

6. In the following sections I will explain the bases in economic theory, evidence, and policymaking that lead me to these conclusions.

Some Economics of Entry

7. Of all the markets addressed by the Telecom Act, the local exchange raises perhaps the most crucial policy issues. Nowhere does competition seem so important, but nowhere does it appear more difficult to bring about. With a single historic monopolist in each local exchange (the ILEC), the Act properly views competition as taking the form of a new entrant. By reducing or eliminating barriers to entry, the Act seeks to hasten the advent of competition and thereby foster the public interest.

8. In these respects the Act reflects a good understanding of economic principles. Competition generally results in lower costs and prices, plus wider variety and more innovative products. Perhaps more compelling than theory on this point is evidence from innumerable industries that have undergone deregulation or have otherwise been exposed to stronger competition. Substantial benefits to consumers and the public interest generally have been documented from strengthened competition in industries ranging from automobiles to long-distance telecommunications. Further benefits arise by virtue of the diminished regulation that is possible once sustainable competition has developed.

9. Strengthened market competition can derive from either of two sources: more rivalrous behavior among incumbents, or new entry. Clearly, where incumbency in a market involves monopoly, absent horizontal fragmentation, competition must come from entry. Over the past twenty years economics has come to appreciate more thoroughly the powerful impact of entry on market performance. This is underscored, for example, by the 1992 revision of the Merger Guidelines, with their heightened focus on the entry process.

10. The criteria for effective entry--that is, entry that constrains an incumbent's market power--in the Merger Guidelines are threefold: Such entry must be *likely* in the sense that it is

profitable and hence represents a predictable response to above-competitive pricing by incumbents. Entry must be *timely*, so that the market impact occurs in a relatively brief period, usually taken to be no more than two years. And it must be of *sufficient* magnitude, character, and scope as to bring price down to competitive levels.^{1/} All three criteria are necessary for effective entry: The failure to achieve any single one will result in unconstrained market power by the incumbent.

11. These criteria are operationalized using the concepts of sunk costs and minimum viable scale. Sunk costs are those specific to a particular market and thus are not recoverable in any other use. Entry is more difficult in the face of substantial sunk costs for the simple reason that the entrant must generate sufficient sales volume and revenues *in the market in question* to cover those costs. If entry fails, there is no opportunity to redeploy such assets usefully elsewhere and thus to cushion the financial loss.

12. The Guidelines measure sunk costs as those that cannot be recouped in the market in question within a period of one year. Minimum viable scale (MVS) measures the smallest sales volume that an entrant must achieve and maintain in order to recover those sunk costs. In short, entry will occur only if market sales opportunities exceed minimum viable scale, or equivalently, only if entry is at least minimally profitable at the necessary scale of operation.

13. A potential entrant into local exchange service faces an array of formidable barriers to entry. Most obviously, the production technology is characterized by enormous economies of scale. As I will discuss later, duplicating existing infrastructure so as to efficiently connect all consumers would be prohibitively expensive and time-consuming. In addition, economies of

¹ Since the Guidelines address mergers rather than monopoly power, their language is in terms of returning price to its premerger level, but the principles are the same.

density arise since more customers within a geographic area require less infrastructure per customer. The incumbent monopolist begins with maximal density, the entrant with minimal. The entrant must also confront economies of connectivity that favor the traditional monopoly provider. Since network architecture was developed without considering the possibility of competitive provision of elements, ILEC ability to connect is inevitably less costly. For example, CLECs must bear additional collocation and transport costs to get traffic from ILEC loops that terminate at ILEC switches to their own switches.

14. Quite apart from these “natural” barriers--those rooted in the underlying technology--entrants may also face “artificial” barriers. The latter do not arise from any technological imperative, but rather are strategies willfully employed by the incumbent to disadvantage or deter a potential entrant. Economics recognizes that sunk costs, control of bottleneck services, first-mover advantages, and other features of the market confer considerable discretion on the incumbent to alter the entry “game” to its advantage. Artificial barriers include raising rivals’ cost, which impose added cost burdens on competitors, and strategic delays, which postpone provision of critical inputs to rivals, with similar adverse cost consequences.^{2/}

15. By preventing, postponing, or diminishing the character of entry into the local exchange, such barriers relax the constraint on the incumbent carrier posed by actual or potential entry. Prices and costs are higher, service variety and innovation suffers, and the public interest is harmed. I shall next address barriers in the context of alternative modes of entry, and with greater specificity for the UNE route to entry.

² See, for example, Salop, “Strategic Entry Deterrence,” *American Economic Review*, 1979, and Waldman and Jensen, *Industrial Organization: Theory and Practice*, 1998, ch. 11.

Modes of Entry into the Local Exchange

16. The Telecom Act contemplates three mechanisms of entry into the local exchange-facilities-based entry, resale, and use of UNEs. Facilities-based entry entails the *de novo* construction of a second, ubiquitous network. Such a process faces two important barriers. First, such a new network would still have to interconnect with the ILEC's facilities in order to make and receive calls involving the ILEC's customers. The Act addresses this by requiring interconnection among all carriers. Interconnection raises a number of issues, however, ranging from the technological parity of the interconnection provided to the CLEC and problems resulting from network architecture developed for a single provider, to opportunities for the ILEC to create or exploit artificial barriers.

17. The second barrier confronting facilities-based entry is that, with isolated exceptions, it is prohibitively expensive and enormously time-consuming. The investment required to duplicate the existing network and thereby reach every household is staggeringly large. The human resources required would probably be literally unavailable. Under the best of circumstances the project would take years to construct and would involve massive sunk costs. Absent some technological breakthrough, such entry is viable only in geographic and product niches with very high scale and density--for example, urban fiber rings oriented toward high-volume business users.

18. Recognizing the delays and difficulties associated with facilities construction, the Act provides for two other methods of entry into the local exchange. One of these is through resale of ILEC services to final customers under an entrant's brand name. By allowing the entrant to avoid the sunk costs associated with *de novo* entry, resale vastly compresses the time frame for

the appearance of a second competitor in the local exchange. Here, too, however, some issues arise.

19. The effectiveness of resale entry in constraining ILEC market power is subject to a number of qualifications: The only services that can be sold are those already offered by the ILEC, thus preventing the entrant from creating new services. More strategically, this fact gives the ILEC an informational and marketing incentive to alter services in ways that it can exploit before a rival CLEC. In addition, the entrant's service offerings are competitive if and only if the wholesale rate is correctly set. It is my understanding that currently-established wholesale rates make resale financially nonviable to CLECs. But even if rates were appropriately set, the resulting competition is only with respect to the retail margin, since the CLEC cannot affect the purchase price of the underlying service.

20. Under the best of circumstances, resale competition is conditioned by the CLEC's obvious dependence on the ILEC with whom it competes for the very service they both sell. This dual role of the ILEC--as a supplier and a competitor to the CLEC--inevitably compromises its incentives to provide high-quality services, ensure reliability, offer necessary support, etc. As MCI WorldCom and others learned in their efforts to enter the interexchange market a generation ago, the incumbent monopolist has incentives that are inherently incompatible with entry and competition. For all these reasons, CLECs will predictably strive to develop their own production process instead of relying on their direct rivals for provision of the major input. A good illustration of this is MCI WorldCom's end-to-end on-net service to its large business customers.

The UNE Route to Entry

21. The infeasibility of facilities-based entry and the limitations of the resale alternative have focused attention on entry through leasing individual elements of the ILEC network. Perhaps together with some self-provisioned elements, leasing permits combining elements that can in turn be marketed as CLEC services. Pursuant to the Act, the FCC's Local Competition Order identified as elements to be unbundled: the local loop, network interface device, transport, switching, access to directory assistance and operator services, signaling systems and database access, and operations support systems. Technological change and experience over the past three years suggest that some of these ought to be defined flexibly in order to ensure CLEC access to new technology, but present discussion will utilize this list.

22. The UNE route facilitates entry in a number of ways. Relative to resale, use of UNEs affords a CLEC some opportunity to combine and add elements in ways that result in somewhat differentiated, if not altogether new, services. As noted before, resold services are inherently limited to those chosen by ILECs. Moreover, given TELRIC pricing, UNEs afford CLECs the opportunity for profitable entry, whereas resale does not.

23. The advantage of UNEs over facilities-based entry is that UNEs allow a CLEC to offer services much more quickly and cheaply. Rather than sinking vast amounts of capital into new facilities construction, CLECs can lease the highest-cost and highest-scale network elements required for local service provision and thereby offer such services virtually as quickly as through resale. The UNE route to entry substantially reduces minimum viable scale relative to *de novo* entry. MVS does not go to zero, since marketing and other support activities still involve nontrivial committed costs.

24. Once a CLEC has established a UNE-based toehold presence in local exchange service, that company will predictably transition toward ever greater facilities commitment. The reason for this has already been noted: No CLEC prefers dependence on the ILEC for service or elements. Thus, the UNE route not only brings alternative service to the local exchange, but it also constitutes a prelude to greater investment in facilities. The CLEC may initially “buy” instead of “build” prohibitively high-cost elements, but it builds more of them as market conditions and experience permit. In this fashion UNEs make facilities entry more feasible.

25. Ironically, it has been argued that, by providing this alternative to facilities-based entry, UNEs actually undermine rather than foster facilities construction. But that is simply not the history of this or other industries. Rather, in industries with high scale and sunk costs, selective initial entry followed by more substantial investment is the norm, since it minimizes the risks of entry into such a setting.^{3/} This scenario of progressively greater self-provision is even more predictable in circumstances where non-facilities operation involves dependence upon one’s leading rival for crucial inputs. Other things equal, no CLEC will rationally prefer to remain dependent on an ILEC any longer than absolutely necessary.

26. The same business calculus implies that the CLEC will purchase different network elements for varying periods of time. Each of the elements identified by the FCC is subject to different economic properties and potential for entry. Analysis by Mark Bryant reveals that

³ F.M. Scherer and David Ross, *Industrial Market Structure and Economic Performance* (Boston: Houghton Mifflin, 1990, pp. 391-392) state, “[M]ost new entry involves relatively small firms--too small, as a rule, to achieve all conventional economies of scale. Entry at or near the minimum efficient scale [MVS] into significant oligopolistic markets is a rarer phenomenon.” Paul Geroski, “What Do We Know About Entry?” *Review of Industrial Organization*, 1995, reports a study indicating that “smaller entrants...had rather higher survival rates than larger entrants...” From this and other evidence, he concludes, “Costs of adjustment seem to penalize large-scale initial entry.”

economies associated with switching, transport, and especially loops all impose significant cost disadvantage on smaller CLECs. See Bryant Decl., ¶ 27-31. In the case of loops, for example, even a CLEC with a market share of 30 percent faces a minimum cost disadvantage of 50 percent, while at 10 percent penetration a CLEC's cost disadvantage rises to 400-900 percent. Id. ¶ 29. For transport, the low-penetration cost disadvantage is even greater, but the differences shrink more rapidly than in the case of loop costs. Switching costs are more nearly similar, but remain over 30 percent even as the CLEC achieves a 30 percent share. Id.

27. The Bryant analysis therefore implies that, while each element is subject to somewhat different scale considerations, none exhibits trivial scale economies. From this it may be concluded that entry will rationally occur at different points in time for each element. For example, it would appear that the economies associated with switching may be realizable by some CLECs. Even here, it is important to distinguish between engineering economies in the switch itself, and economies arising from the provision of switching services. The latter may depend upon traffic aggregation and other network issues, and may result in greater economies than implied by a simple engineering study of a switch. By contrast, however, loops are characterized by extremely high fixed and sunk costs, making duplication prohibitively expensive as well as socially wasteful. Yet other elements such as signaling seem destined by their very nature to remain controlled by the ILEC.

28. Loops and other very-high-scale elements are therefore likely to be purchased by CLECs for the foreseeable future, quite possibly until some new technology alters their underlying natural monopoly characteristics. That arrangement is fully consistent with entry promotion, since awaiting the time when loops are efficiently duplicated will clearly postpone entry and perhaps

deter it altogether. The theory underlying UNEs is precisely to avoid such duplication and the resulting impediment to entry.

29. It should also be noted that CLECs face other cost impediments that go beyond conventional economies of scale for a particular UNE. Economies of density and connectivity combine to create a mosaic of cost considerations favoring the ILEC. Not all of these are necessarily susceptible to resolution by UNEs, nondiscriminatory access requirements, or any other obvious regulatory approach. For this reason it is doubtful that any ILEC would ever choose to trade places with a CLEC. But while some disadvantages to CLECs may well persist, as many impediments to entry as possible must be eliminated, and as quickly as possible. Indeed, given the huge resulting benefits, where issues are close, erring on the side of encouraging entry would seem to be good policy.

Terms and Conditions

30. For the UNE route to entry to be practical, a CLEC must have access to *all* the necessary elements on nondiscriminatory terms. Nothing is achieved if all but one critical element is available, since CLEC entry is hostage to the least available remaining input. Indeed, given the jointness of the production process involved in local exchange service, the failure to provide one critical input can increase the CLEC's costs of other elements that might in principle be efficiently self-supplied. For example, problems in provisioning loops, by driving down switch utilization, can raise actual switching costs incurred by the CLEC. Thus, by virtue of its ability to manipulate provision of a key element, the ILEC may be able to leverage an even greater cost disadvantage onto a CLEC.

31. The Act requires nondiscriminatory access to unbundled network elements for which ILEC denial would “impair” the CLEC’s ability to offer service. Read literally, any cost differential between the ILEC and the CLEC might be deemed to trigger this provision, but in reality not all cost differences make a significant economic difference to market outcomes. There may be unambiguous, but trivial, cost differences between sellers that simply have no appreciable impact on market price and customer choice. At some point, however, cost differences necessarily translate into price differences that significantly alter customer decisions.

32. The implication of these observations is that while not every conceivable cost difference between ILEC and CLEC local exchange services will make the latter noncompetitive, a CLEC’s ability to offer services that customers actually choose and that therefore constrain the ILEC must not be subject to material impairment. A materiality condition will avoid a hair-trigger approach that requires element availability for *any* impairment regardless of its market significance. At the same time this standard will ensure that differences that truly make a difference are prohibited.

33. Consistent with the above discussion, it is possible to envision several criteria for material impairment. These might include the following:

- (a) Outright inability to provide service or feature offered by ILEC.
- (b) Significant cost or quality differences between services.
- (c) Unprofitability of CLEC service, otherwise comparably produced, that is profitable to the ILEC.
- (d) Inability of CLEC service, otherwise comparably priced, to attract business from ILEC, or loss of business to ILEC.
- (e) Significant delay in offering CLEC service relative to comparable ILEC service.

33. Although this discussion has focused on pricing of network elements, there are other aspects of CLEC dependence on the ILEC for UNEs that are equally important to the prospects for entry and to the competitive restraint that a CLEC imposes. These nonprice dimensions include the quality, reliability, timing, and ubiquity of UNE provision by the ILEC. Inferior UNE quality, unreliability, delayed responsiveness, and incomplete coverage could render CLEC services nonviable, and could do so even if there were no issues regarding cost.

34. For two reasons these nonprice dimensions raise threats to CLEC services at least as serious as that posed by rate differences. First, poor quality, unreliable service can not only lose current business, but it can also damage a CLEC's long-term reputation, adversely affecting future customer acceptance. In this respect nonprice service impediments may be even more harmful than simple price differentials. Second, inferior service quality, slow response times, and so forth, are generally easier for an ILEC to characterize as the result of forces beyond its control, but are no less effective against a CLEC.^{4/} Simple overcharging is more readily observed and interpreted and may therefore be a less preferred strategy.

The Setting for Regulatory Policy

35. The interaction between an ILEC and a CLEC must be recognized as inherently asymmetric. The ILEC has the advantage of prior commitment to the market in the form of sunk capital, which confers a first-mover advantage and allows for strategic entry deterrence and entry handicapping. Moreover, the incumbent always has a greater incentive to deter entry than the entrant does to persist in its effort to enter. This follows from the fact that the incumbent is

⁴ Nicholas Economides, "Raising Rivals' Costs in Complementary Goods Markets: LECs Entering into Long Distance and Microsoft Bundling Internet Explorer," paper presented at Telecommunications Policy Research Conference, 1997.

protecting monopoly profits, which would decline in total upon actual entry as well as be split among multiple firms. This may cause a potential entrant rationally to abandon its efforts even if its costs are identical, much less if it faces a cost disadvantage relative to an incumbent.

36. The incentives of ILECs and CLECs must be recognized as fundamentally incompatible. They cannot be reconciled by the simple expedient of imposing conditions on operation, no matter how carefully designed those conditions may be. Given these incentives, the public interest purposes of the Act can be achieved only through a combination of (a) regulatory vigilance, (b) discounting of self-serving claims, and (c) erring if necessary on the side of entry and competition.

37. A good example of these concerns arises over the issue of ubiquity of application of the standards of the Act. It must be recognized that in some particular local exchange, or for some particular switch in a local exchange, or for some particular service at that switch, some competition may exist. This is indisputably the case, for example, for certain business services in some major metropolitan areas. With literally tens or hundreds of thousands of such possibilities, however, an affirmative case-by-case determination as to where the standards of the Act should apply would lead to endless litigation and enormous business uncertainty, effectively eviscerating the Act.

38. So, too, would an approach that allowed for case-by-case exceptions to otherwise uniform standards, as some have urged. Despite its superficial appeal, in reality this approach would inevitably encourage time-consuming and costly proceedings in countless areas, the only certain result of which would be substantial delays in entry into local exchanges. With a limited number of arguably exceptional cases at present, the public interest in competition would be best served by uniform list of nationally available unbundled elements, full-speed-ahead encouragement

of entry, and a revisiting of the standards in an appropriate time frame. Given the pace at which relevant changes are likely to occur, a three-year review has much to recommend it. At that time, a further decision can be made between continued application of uniform standards or some other approach better suited to then-extant conditions.

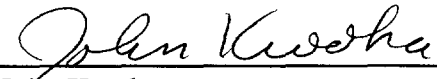
Clearing the Path for Competition

39. The Telecom Act is directed at worthy economic and social goals, but three years of experience have also underscored the difficulties in achieving some of those objectives. Perhaps most notably, competition has not come to the local exchange in any meaningful way, and it now appears that competition will not come until the path is cleared for use of unbundled network elements. The UNE route contains numerous pitfalls, both natural and artificial, which need to be addressed if entry is to be viable and effective.

40. I have urged that the “impairment” standard set forth in the Act be interpreted as requiring availability of any element for which denial would impose a material cost on a competitor or equivalently would cause the competitor a material loss of business. I have also urged that, at least initially, there be a uniform list of nationally available unbundled elements. I believe that economic theory, evidence, and considerations of policymaking clearly imply that the promise of competition--greater consumer choice, lower prices and costs--will most quickly and surely be realized under this approach.

I declare, under penalty of perjury, that the foregoing is true and correct.

Executed on May 25, 1999.


John Kwoka

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

In the Matter of:)	
)	
Implementation of the Local Competition Provisions in the Telecommunications Act of 1996)	CC Docket No. 96-98
)	
)	
Interconnection between Local Exchange Carriers and Commercial Mobile Radio Service Providers)	CC Docket No. 95-185
)	

**DECLARATION OF MARK T. BRYANT, Ph.D.
On Behalf of MCI WorldCom, Inc.**

Based on my personal knowledge and on information learned in the course of my business duties, I, Mark T. Bryant, declare as follows:

1. My name is Mark T. Bryant. I am employed by MCI WORLDCOM, Inc. ("MCI WorldCom") as an Executive Staff Member in the Economic Analysis Group of the Legal and Public Policy organization. In that position, I am responsible for the analysis of economic issues relating to telecommunications industry regulation and public policy, and for assisting in the development and advocacy of MCI WorldCom's public policy positions. For the past five years, I have had primary responsibility for managing MCI WorldCom's participation in the development of the HAI Model, a model used in the estimation of telecommunications network costs.

2. The purpose of my declaration is to describe the economies of scale to which all loop, transport and switching unbundled network elements ("UNEs") are subject. Each category of UNEs has a somewhat different cost structure, but each is, to varying degrees, characterized by economies of scale. As a consequence, each category of

UNEs presents challenges to a competitive local exchange carrier (“CLECs”) seeking to provide service using its own facilities. All of these network elements will be very costly for a new entrant relative to the costs experienced by the incumbent local exchange carrier (“ILEC”). The cost of some of these network elements will decline rapidly as the new entrant gains market share. For still other network elements, the new entrant will never overcome the cost advantage enjoyed by the incumbent.

3. For most of this century, regulation of the telecommunications industry was premised on the assumption that the operation of local telephone networks was a natural monopoly. That is to say, experience had shown that due to the economics of constructing telephone networks, as well as the need for interconnection of all subscribers, only one telecommunications network provider could profitably operate in a given local service area.

4. A natural monopoly generally occurs when the fixed cost of production is large compared to the variable cost. In this circumstance, each producer entering the market must incur the greater part of the total cost of providing service to the entire market, regardless of the share of the market served by each producer. Markets with this cost structure will tend inexorably toward supply by a single producer because the producer with the largest market share will enjoy a cost advantage over all other producers.

5. The Telecommunications Act of 1996 (the “Act”) may be seen as a market test of the hundred-year-old assumption that the local telecommunications market is a natural monopoly and of whether, given recent technological advances and changes in the demand for telecommunications services, certain components of the market can profitably be provided by multiple competitive firms. The Act's requirements that competitors be

provided access to unbundled network components clearly contemplates that new entrants may wish to provide certain network elements themselves, and combine these self-provisioned network elements with UNEs obtained from the ILEC. This approach sensibly recognizes that new entrants may not be able to deploy facilities to provide all network elements at once, and that the provision of certain network elements may be subject to constraints on the minimum effective scale at which delivery of each network element is profitable.

The Loop

6. If any portion of the local network is subject to natural monopoly market conditions, it is the local loop. The loop is that portion of the local exchange network that connects end users with the local exchange switch. It comprises 44% of the total investment by ILECs in their networks.¹ The loop is characterized by very costly structures, such as poles, conduit and trenches, that support the cable providing end user to wire center connectivity. These structures constitute a very large fixed cost because, in order to serve a particular neighborhood, poles must be placed or trenches must be dug regardless of the number of subscribers in that neighborhood. The effect on unit costs is that cost increases as the number of subscribers decreases, and/or as the distance to reach each subscriber or group of subscribers increases.

7. The loop architecture is a tree-and-branch network. As the cables needed to serve subscribers emerge from the wire center, they typically are very large in size, such that the fixed cost of the supporting structure may be spread over a large number of subscribers. As distance from the wire center increases, the feeder plant branches to serve

¹ Federal Communications Commission, Statistics of Common Carriers, December 5, 1997, Table 2.7. This figure is total cable and wire facilities as a proportion of total

neighborhoods along the feeder route. As the cable branches, the same supporting structures are required, but carry progressively smaller cables. The fixed cost of the structures, therefore, must be recovered from fewer and fewer subscribers. Finally, the feeder cable terminates in a particular neighborhood. The wire pairs (or fiber optic channels) in the feeder cable are connected to individual wire pairs in the distribution cables. The distribution cables (each requiring the same sort of supporting structures that are required for the feeder cables) then go down streets and alleyways to connect individual households and businesses to the telephone network. Just as in the feeder network, as the distribution cable branches to serve subscriber locations, the same structure is required, but the fixed costs of the structure must be recovered from fewer and fewer subscribers. Thus, large portions of the network have very few subscribers over very large distances (particularly in rural areas) and therefore have relatively very high fixed structure costs.

8. The cost of cables is variable to some extent; larger cables may be placed where large numbers of subscribers are present, and smaller, less costly cables may be placed where fewer subscribers are present. Cables, however, constitute a relatively small component of total investment in cable and wire facilities. In the HAI Model default results for New York Telephone, cable investment is approximately 28% of total loop investment. In addition, cables frequently must be placed in advance of demand. In deciding what size of cable to place to serve a given locale, the telephone plant engineer must balance the cost of placing cable that will not initially be used to serve subscribers against the cost of returning to the location at some future time to place additional cables when the cable pairs placed initially are all used to serve subscribers. In areas with high

telephone plant in service for all reporting carriers.

growth rates, the cost of placing and maintaining excess cable may be less than the cost of reinforcing cable at a later date. The need to install excess cable will be particularly acute for a new entrant. Whereas the ILEC need only consider growth in demand due to an increasing population in an area or due to other factors that will stimulate demand for telephone lines for existing subscribers, the new entrant must also consider growth that will occur due to its own marketing efforts as it attracts subscribers from the incumbent. On a per-subscriber basis, then, the new entrant will face higher “up-front” costs than will the incumbent.

9. The ILEC currently has virtually all subscribers attached to its loop plant, and thus has a relatively large number of subscribers over which the fixed cost of the loop plant may be spread. It will be difficult, if not impossible, for new entrants profitably to overbuild the existing telephone network, since the new entrant initially would have very few customers from which the same fixed costs may be recovered.

Transport

10. At first glance, it might appear that local transport is the network component that is most subject to competitive entry or even to effective competition at the present time. Many cities across the country have multiple competitive access providers (“CAPs”) in operation, some of which have built extensive urban fiber optic networks. It is important, however, to understand the functions that these CAPs perform and the nature of the connectivity that they provide. For a number of reasons, the services provided by CAPs cannot substitute entirely for the transport network elements that exist in the networks of the ILECs. The transport network element must be viewed, at least in the near term, as an essential facility for the provision of competitive local exchange service.

11. Transport facilities are similar in many ways to loop facilities. They both consist of cables supported by poles or buried in trenches or pulled through buried conduit. For both transport facilities and loop facilities, the source of economies of scale are in the fixed costs of support structures. With transport facilities, just as with loops, structure costs vary directly with distance; the greater the distance to be covered, the more poles or feet of trench or feet of conduit are required. Thus, for any given amount of traffic, the cost per unit of traffic will be lower where large amounts of traffic can be aggregated and carried a short distance than in areas where smaller amounts of traffic must be carried for longer distances.

12. Transport and loop facilities differ in the design of the network in which they are deployed, in the bandwidth carried by the cables used in each, and in the sensitivity of each type of facility to the amount of traffic carried. While loop facilities typically are constructed in a tree-and-branch architecture, where large cables near the central office branch into progressively smaller cables as distance from the central office increases, transport facilities typically are constructed as rings and are of constant bandwidth over their entire length. While cables used in loops are a mixture of fiber optic cables and copper cables, most transport facilities are exclusively constructed using fiber optic cables. Loop facilities generally are engineered with a separate cable pair for each line (newer types of digital subscriber line equipment are capable of concentrating traffic over fewer channels) and are, for the most part, not sensitive to the amount of traffic carried. Transport facilities generally are engineered to have sufficient capacity to meet peak demand loads, and the cost of transport is therefore traffic-sensitive to some degree.

13. CAPs historically were in the business of providing connectivity for interexchange carriers ("IXCs") between ILEC wire centers and IXC points of presence.

Their function consists of aggregating long distance traffic at specific wire centers (usually large wire centers in central business districts), carrying that traffic to another point (usually at or near the ILEC's access tandem) and delivering the traffic to one or more IXC's. As such, the transport facilities operated by CAPs do not constitute a network in the sense of connecting multiple points to and among each other, but rather are point-to-point connections, carrying substantial amounts of traffic from one point over a specific route to another point. Where sufficient traffic can be generated to reduce the fixed cost per unit of traffic to a level comparable to that achieved by the ILEC, competitive transport facilities may profitably be offered.

14. As CAPs have begun to offer a broader range of services, including local exchange service, their networks have evolved to include more customer locations and, in some instances, to provide connections between customer locations. However, CAPs generally are not in the business of providing transport facilities ubiquitously within an ILEC's local exchange area. Certain competitive carriers, including AT&T and MCI WorldCom, have constructed fiber optic transport facilities in a number of cities, connecting a number of locations within the local exchange either to their long distance switch, or increasingly to their local exchange switch. In all cases, these facilities function to provide connectivity from individual office buildings to the local or long distance switch and, without exception, are located in central business districts or in other areas with large concentrations of business customers (such as corporate campuses or industrial parks). Again, competitive transport facilities can at this time only be provided profitably where large traffic volumes can be aggregated and delivered from one point to another, and where distances are not great.

15. Modern local exchange networks are constructed as a ring using fiber

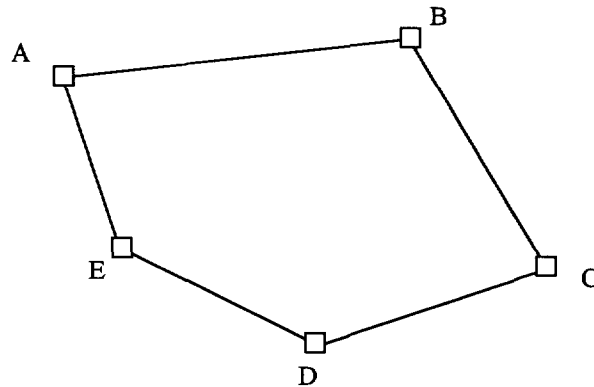


Figure 1 - ILEC Ring Network

optics to connect all points on the network. The primary advantage of the ring architecture is that it provides very high reliability of service by ensuring that a communications path always exists between any two points on the network. If a break occurs in the cable connecting any two points on the network, traffic can instantaneously be re-routed in the opposite direction on the ring. Figure 1 represents such a ring architecture, connecting five ILEC wire centers, A through E. If a break were to occur in the ring between wire center D and wire center E, traffic could be re-routed to travel from D to C to B to A to carry traffic from D to E.

16. Within a local exchange area, the ILECs have switches located in each wire center. This provides the ILECs with a number of cost advantages that will not initially be available to new entrants.

17. First, a large proportion of traffic in the local exchange network originates and terminates within the same central office. This intraoffice traffic need not be transported. Intraoffice traffic is, for this reason, less costly than interoffice traffic. For the CLEC, which will not initially have switches in each wire center, all traffic must be transported, even traffic originating and terminating in the same wire center, and thus will be more costly. In constructing its network, therefore, the CLEC must size its transport facilities to carry all traffic, while the ILEC need only size its network for that fraction of traffic that is interoffice in nature. This is not an insignificant consideration. According to Engineering and Operations in the Bell System,² the fraction of total calls that are intraoffice ranges from 31% in urban areas to as much as 66% in rural areas.

18. Second, because the CLEC must evolve its fiber ring over time, the CLEC will incur higher structure and cable costs than the ILEC as its network develops.

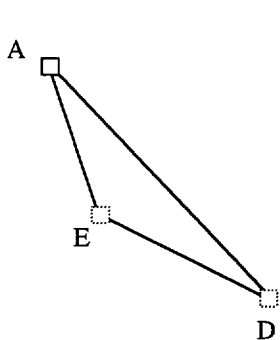


Figure 2 - CLEC Ring, Stage

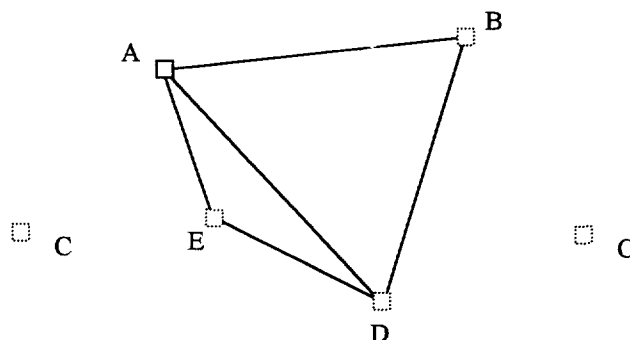


Figure 3 - CLEC Ring,

19. Figure 2 illustrates a CLEC network connecting three of the five wire centers in the network served by the ILEC. As Figure 3 illustrates, if the CLEC decides to

² Engineering and Operations in the Bell System, Table 4.5, at 125. AT&T Bell Laboratories, Murray Hill, N.J., 1983.

extend its network to serve wire center B, it must construct facilities from D to B and from A to B. Alternatively, it could construct two physically diverse routes from A to B. In both this case and in the case described above, two separate transport routes, with separate structure and cable costs, are required. Note that the pre-existing transport route connecting wire centers A and D is now unnecessary. If wire center C is later added to the network, then both the A-D routes and B-D routes will become unnecessary.

20. Finally, the ILECs have both interoffice facilities and loop facilities throughout the local exchange area. As a result, at least a portion of the structure costs of interoffice facilities and loop facilities may be shared, thus reducing the unit costs of structure for both loops and transport. This opportunity for cost savings will not initially be available to the CLEC, and may not be available at all depending on whether the CLEC can profitably overbuild the incumbent's loop facilities.

Switching

21. Local exchange switches do not make use of outside plant, as do loops and transport, but nevertheless are subject to some economies of scale. It is very difficult to quantify the relative proportions of fixed and variable costs within the switch because information on the actual price paid by local exchange companies for switches is, in all cases, subject to non-disclosure agreements and is claimed to be proprietary by the switch manufacturers. The information used in the HAI Model for switching costs is based on one of the very few publicly-available sources of information on switching costs -- an annual survey conducted by Northern Business Information. Based on the published survey results, the HAI Model uses a fixed investment of \$242.73 per line for Regional Bell Operating Companies ("RBOCs") and large independent telephone companies, and a fixed investment of \$416.11 per line for small independent telephone companies. For the

RBOCs and large independent companies, the variable investment per line ranged from slightly over \$140 per line to about \$80 per line, with the variable cost decreasing as the size of the switch increases.

22. These figures demonstrate that fixed costs are the largest portion of the cost of the switch, that variable costs decrease as the number of lines served increases, and thus that switching may be subject to some economies of scale.

23. In addition to the cost of the switch itself, several items that support the switch also have costs that do not vary with volume. These include the cost of the building housing the switch, the cost of power and air conditioning, and certain test equipment. The basic cost of software used to operate the switch also does not vary with usage, and this can be a significant and recurring cost over the life of the switch.

24. All of this is not to suggest that CLECs cannot economically install switches in local exchange areas -- in fact, MCI WorldCom and other carriers are actively deploying switches in local markets across the country. What this information does suggest is that the number of switches deployed by CLECs in a local exchange is likely to be limited, and that this will have effects on other costs, particularly on the cost of transport, that will be experienced by CLECs.

Quantifying The Effects Of Market Share On Costs

25. It is difficult to determine in advance which network elements a single company can efficiently provide and which may be subject to sustainable competition. This question can really only be answered in the marketplace. It may, however, be possible to glean some information on the degree to which the primary network elements are subject to economies of scale by referring to the proxy cost models that recently have been considered by the Federal Communications Commission in connection with the

determination of the cost of providing telephone service for purposes of universal service funding in high cost areas.

26. Attached to my declaration in Exhibit A are 15 charts which represent the results of an analysis of the relative costs of an ILEC and a CLEC using the HAI Model, version 5.1, with certain modifications.³ The Model was modified to accept as an input the market share of the company being studied over an entire study area. For this analysis, the model assumes that the company being studied will build plant to serve the entire study area, but will have as customers only the input proportion of customer lines. The Model will then design plant to serve the study area, scaling non-fixed costs to meet the defined demand, subject to the cable sizing factors and switch fill factors used in the model by default. Other than the market share parameter, all other inputs in the Model are set to default values. The study area used is the area served by New York Telephone.

27. The results of the analysis show that for all loop, switching and transport network elements, the CLEC suffers from a significant cost disadvantage at low penetration levels. As market share increases, this disadvantage shrinks rapidly, but never disappears entirely until the ILEC and CLEC market shares are equal.

28. Charts 1 through 9 of Exhibit A show the cost of loops for the ILEC and the CLEC, respectively, for each of the nine density zones (in lines per square mile) studied by the HAI Model at various penetration rates for the CLEC. Chart 1 shows the cost relationship in the most rural areas (less than five lines per square mile), while Chart 9 shows the relationship in the most urban areas (density of greater than 10,000 lines per square mile). In dollar terms, the CLEC cost disadvantage ranges from \$2,300 per line

³ The underlying data used in the charts is attached in Exhibit B.

per month in the most rural areas, to \$43 per line per month in the most dense areas at the five percent penetration level. At the 30% penetration level, the dollar disparity has fallen to \$370 per line per month in the most rural areas, and to approximately \$10 per line per month in the most urban areas.

29. Chart 10 of Exhibit A presents the same information expressed in terms of the percentage difference between CLEC cost and ILEC cost. It can be seen that the relative relationship between ILEC and CLEC cost is remarkably similar for all density zones except for the most rural areas, where the disparity between CLEC and ILEC costs is very large, and continues to be large until CLEC market penetration approaches 50%. In percentage terms, CLEC costs are almost 900% above ILEC costs in the most rural zones, and more than 400% in the most urban areas at the 10% penetration level. Even at penetration levels as high as 30%, CLEC costs are at least 50% higher than ILEC costs for all density zones.

30. Charts 11 through 14 of Exhibit A show the CLEC and ILEC costs for end office switching and three types of transport (direct, dedicated and common)⁴ for various levels of CLEC market penetration. Chart 15 of Exhibit A presents the same information expressed as the percentage difference between ILEC and CLEC costs. The CLEC disadvantage for transport is much greater than for loops at very low penetration levels,

⁴ The HAI Model defines three forms of transport: 1) common transport, which is any transport traffic that is switched through a tandem; 2) dedicated transport, which is IXC dedicated transport traffic, both switched and special access; and, 3) direct transport, which is any LEC traffic that travels from one end office to another without being switched through the tandem. Elsewhere in these comments, the terms "shared transport" and "dedicated transport" are used. There is not an exact correspondence between these definitions and the definitions used in the HAI Model. Common transport in the HAI Model is always shared transport, while dedicated and direct transport in the HAI Model may contain both shared and dedicated transport.

ranging from over 1,000% to 667% at the 10% penetration level, but that this disadvantage decreases much more rapidly as CLEC penetration increases. Switching costs are much more similar for the CLEC and ILEC at low penetration levels than for other network elements and become even more similar as penetration increases. At 10% market penetration, switching costs for the CLEC are about 132% above ILEC switching costs, but decrease to 31% above ILEC switching costs at 30% penetration.

31. The data resulting from this analysis suggest that a CLEC attempting to completely overbuild the ILEC's network will always be at a significant cost disadvantage. The disadvantage is most severe for loops, is somewhat less for transport, and still less for end office switching. In purely economic terms, whether entry can occur under these circumstances depends largely on the current differential between ILEC prices and costs, and on whether the ILEC can respond quickly by increasing its efficiency in order to reduce prices to levels more in line with economic cost.

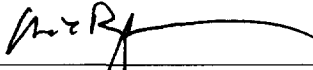
32. It is, of course, important to recognize that the fundamental assumption made in this analysis -- that the CLEC will begin by completely overbuilding the ILEC's network -- is unrealistic.⁵ Instead, the CLECs have been, and will continue, entering only certain segments of the market in limited geographical areas. It also is unrealistic to assume, as does this analysis, that only one competitive entrant will exist within a given local exchange market. Multiple companies will, and have attempted to, provide local

⁵ An estimate may be made of the total cost of completely overbuilding the ILECs' local exchange networks using the HAI Model. Based on HAI Model, version 5.1, results for New York Telephone Company, Southern Bell-Georgia, Southwestern Bell-Kansas, Michigan Bell, and Pacific Northwest Bell-Washington, the total investment required to duplicate the ILECs' local exchange networks using forward-looking technology would be approximately \$100.2 billion. Duplicating the switching facilities of the ILECs would require approximately \$20.5 billion in investment, and duplicating the transport facilities would require an investment of approximately \$6.8 billion.

exchange service competitively. What the analysis does show, however, is that it is not reasonable to suppose that a new entrant can profitably provide ubiquitous local exchange service using its own facilities at the outset of local exchange competition. For all network elements, the widespread development of local exchange competition will occur only if the new entrant has access to the ILEC's unbundled network elements at prices based on economic cost. For some network elements, the CLEC may eventually be able to profitably construct and use its own facilities. For others, particularly for loops and possibly for some forms of transport, the CLEC may never profitably be able to construct facilities and will, barring the development of some new technology with very different cost structures, be dependent on ILEC unbundled network elements for an indefinite period of time.

I declare, under penalty of perjury, that the foregoing is true and correct.

Executed on May 25, 1999.



Mark T. Bryant

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